Part 9 · Spot the Mistake

Each solution below reaches a wrong answer, and exactly one step is to blame. Find the first wrong step and rewrite it correctly. Marking other people's work is the fastest way to stop making their mistakes.

🔍 Spot the Mistake

Finding HCF and LCM of 6 and 20

Step 1. $6 = 2 \times 3$ and $20 = 2^2 \times 5$.

Step 2. HCF is the product of the greatest common power, so $HCF = 2^2 = 4$.

Step 3. LCM is the product of the smallest power of every prime seen, so $LCM = 2 \times 3 \times 5 = 30$.

_____ The first wrong step is Step _____ . What should it say?

_____

🔍 Spot the Mistake

Using the HCF × LCM identity for three numbers

Step 1. $6 = 2 \times 3$, $72 = 2^3 \times 3^2$, $120 = 2^3 \times 3 \times 5$.

Step 2. $HCF(6, 72, 120) = 6$ and $LCM(6, 72, 120) = 360$.

Step 3. Since $HCF \times LCM = a \times b$ for two numbers, it must also equal $6 \times 72 \times 120$ here, so $6 \times 360 = 51840$.

_____ The first wrong step is Step _____ . What should it say?

_____

🔍 Spot the Mistake

Proving √2 is irrational

Step 1. Assume $\sqrt{2} = \frac{a}{b}$ for coprime integers a, b.

Step 2. Squaring: $a^2 = 2b^2$, so 2 divides a^2, so 2 divides a.

Step 3. Write $a = 2c$. Then $2b^2 = 4c^2$, so $b^2 = 2c^2$ — this just confirms b is some integer, no contradiction needed here.

_____ The first wrong step is Step _____ . What should it say?

_____

Every proof in this chapter, from HCF to √2, comes back to one fact: primes factorise a number in exactly one way. Hold onto that, and the rest follows. □√2